




PATENT  
Attorney Docket No. IBX-008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Card et al.  
SERIAL NO.: 10/656,607 GROUP NO.: Not yet assigned  
FILING DATE: September 5, 2003 EXAMINER: Not yet assigned  
TITLE: Intelligent Control for Process Optimization and Parts Maintenance

**CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8**

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 30 day of September, 2003.

  
Susan Boucher

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith is/are:

Transmittal Form (1 page); Information Disclosure Statement (3 pages);  
PTO Form 1449 (2 pages); copies of cited references (A-A5, B1-B2, C1-C13); and a  
return-receipt postcard.

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# TRANSMITTAL FORM

Application Serial Number	10/656,607
Filing Date	September 5, 2003
First Named Inventor	Card
Group Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket No.	IBX-008
Patent No.	Not applicable
Issue Date	Not applicable

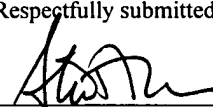
## ENCLOSURES (check all that apply)

<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Check Attached <input type="checkbox"/> Copy of Fee Transmittal Form  <input type="checkbox"/> Amendment/Response <input type="checkbox"/> Preliminary <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets _____]  <input type="checkbox"/> Petition for Extension of Time  <input checked="" type="checkbox"/> Information Disclosure Statement <input checked="" type="checkbox"/> Form PTO-1449 <input checked="" type="checkbox"/> Copies of IDS Citations  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Sequence Listing submission <input type="checkbox"/> Paper Copy/CD <input type="checkbox"/> Computer Readable Copy <input type="checkbox"/> Statement verifying identity of above	<input type="checkbox"/> Copy of Notice to File Missing Parts of Application (PTO-1553)  <input type="checkbox"/> Formal Drawing(s)  <input type="checkbox"/> Request For Continued Examination (RCE) Transmittal  <input type="checkbox"/> Power of Attorney (Revocation of Prior Powers)  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application  <input type="checkbox"/> Small Entity Statement  <input type="checkbox"/> CD(s) for large table or computer program  <input type="checkbox"/> Amendment After Allowance  <input type="checkbox"/> Request for Certificate of Correction <input type="checkbox"/> Certificate of Correction (in duplicate)	<input type="checkbox"/> Notice of Appeal to Board of Patent Appeals and Interferences  <input type="checkbox"/> Appeal Brief (in triplicate)  <input type="checkbox"/> Status Inquiry  <input checked="" type="checkbox"/> Return Receipt Postcard  <input checked="" type="checkbox"/> Certificate of First Class Mailing under 37 C.F.R. 1.8  <input type="checkbox"/> Certificate of Facsimile Transmission under 37 C.F.R. 1.8  <input type="checkbox"/> Additional Enclosure(s) (please identify below)
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## CORRESPONDENCE ADDRESS

Direct all correspondence to: Patent Administrator  
Testa, Hurwitz & Thibault, LLP  
High Street Tower  
125 High Street  
Boston, MA 02110  
Tel. No.: (617) 248-7000  
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## SIGNATURE BLOCK

Respectfully submitted,  
  
Steven J. Frank  
Attorney for Applicant(s)  
Testa, Hurwitz & Thibault, LLP  
High Street Tower  
125 High Street  
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Date: September 20, 2003  
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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

**REMARKS**

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- ☒ (1) within three (3) months of the **filing date** of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the **date of entry of the national stage** as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the **first Office action** on the merits, or before the mailing of a **first Office action** after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- ☐ (2) after the period defined in (1) but before the mailing date of a **final action** or a **notice of allowance** under 37 C.F.R. 1.311, and
- ☐ the requisite Statement is below, **OR**
- ☐ the requisite fee under 37 C.F.R. 1.17(p), namely **\$180.00**, is included herein, or

- ☐ (3) after the mailing date of a **final action** or **notice of allowance** but before the payment of the **issue fee**, **AND**
- ☐ the requisite Statement is below, **AND**
- ☐ the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

#### STATEMENT

As required under 37 C.F.R. 1.97(e), Applicant(s), through the undersigned, hereby state either that [check the appropriate space only if either (2) or (3) is checked on the previous page and the Statement is required]:

- ☐ 1. Each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application **not more than three months** prior to the filing of the Information Disclosure Statement; or
- ☐ 2. No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to **any individual** designated in 37 C.F.R. 1.56(c) **more than three months** prior to the filing of the Information Disclosure Statement.

In addition, Applicant wishes to inform the Examiner about the following co-pending patent applications, publications, issued patents, and Office Actions issued therein:

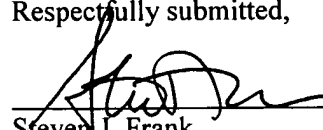
U.S. Serial No. 10/243,963, filed on September 13, 2002, by Card et al. (IBX-001);  
U.S. Serial No. 10/244,154, filed on September 13, 2002, by Reitman et al. (IBX-002);  
U.S. Serial No. 10/645,209, filed on August 21, 2003, by Chan et al. (IBX-004); and  
U.S. Serial No. 10/621,532, filed on July 17, 2003, by Card et al. (IBX-005).

Date: September 30, 2003  
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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven J. Frank", is written over a horizontal line.

Steven J. Frank  
Attorney for the Applicants  
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High Street Tower  
125 High Street  
Boston, Massachusetts 02110



<b>FORM PTO - 1449</b> <b>INFORMATION DISCLOSURE STATEMENT</b>				<b>ATTORNEY DOCKET NO.:</b> IBX-008 <b>APPLICANT(S):</b> Card et al. <b>SERIAL NO.:</b> 10/656,607 <b>FILING DATE:</b> 9/5/03 <b>GROUP:</b> Not yet assigned					
<b>U.S. PATENT DOCUMENTS</b>									
<b>EXAM. INIT.</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>CLASS</b>	<b>SUB CLASS</b>	<b>FILING DATE IF APPROPRIATE</b>		
	A1	5,467,883	11/21/95	Frye et al.	216	60	11/27/93		
	A2	5,559,690	9/24/96	Keeler et al.	364	164	9/16/94		
	A3	5,654,903	8/5/97	Reitman et al.	364	551.01	11/7/95		
	A4	5,740,033	4/14/98	Wassick et al.	364	149	10/13/92		
	A5	6,268,226	7/31/01	Angell et al.	438	16	6/30/99		
<b>FOREIGN PATENT DOCUMENTS</b>									
<b>EXAM. INIT.</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>COUNTRY CODE</b>	<b>CLASS</b>	<b>SUB CLASS</b>	<b>FILING DATE</b>	<b>ABSTRACT ONLY</b>	<b>ENGLISH LANG (Y/N)</b>
	B1	WO 01/57605	8/9/01	WO	G05B	13/04	1/11/01	N	Y
	B2	DE196 37 917 A1	3/19/98	DE	G05B	13/04	9/17/96	Y	
<b>OTHER ART, JOURNAL ARTICLES, ETC.</b>									
<b>EXAM. INIT.</b>	<b>OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>								
	C1	Card et al., "Dynamic Neural Control for Plasma Etch Process," <u>IEEE Transactions on Neural Networks</u> , (1997).							
	C2	Card et al., "Impacts of Maintenance Input on the Prediction Accuracy of an APC Controller," Presentation at AEC/APC Symposium XIV (September 9-11, 2002).							
	C3	Card et al., "Advanced Analysis of Dynamic Neural Control Advisories for Process Optimization and Parts Maintenance," Presentation at AEC/APC Symposium XIV (September 9-11, 2002).							
	C4	Dillon et al., "Guest Editorial Everyday Applications of Neural Networks," <u>IEEE Transactions on Neural Networks</u> , 8:4 (July 1997).							
	C5	Hatzipantelis et al., "Comparing Hidden Markov Models with Artificial Neural Network Architectures for Condition Monitoring Applications," <u>Artificial Neural Networks</u> , 26-28, Conference Publication No. 409 (June 1995).							



	C6	Kim et al., "Intelligent Control of Via Formation by Photosensitive BCB for MCM-L/D Applications," <u>IEEE Transactions on Semiconductor Manufacturing</u> , 12:503 (1999).
	C7	Konstantopoulos et al., "Controllers with Diagnostic Capabilities. A Neural Network Implementation. Journal of Intelligent and Robotic Systems," Department of Electrical Engineering, University of Notre Dame, IN 12: 197-228 (1995).
	C8	Moyne, "AEC/APC Vision: A Research and Suppliers' Point of View," 3 <sup>rd</sup> Annual European AEC/APC Conference Proceedings (2002).
	C9	Rietman et al., "A Study on $\mathcal{R}^m \rightarrow \mathcal{R}^1$ Maps: Application to a 0.16- $\mu\text{m}$ Via Etch Process Endpoint," <u>IEEE</u> (2000).
	C10	Rietman et al., "A System Model for Feedback Control and Analysis of Yield: A Multistep Process Model of Effective Gate Length, Poly Line Width, and IV Parameters", <u>IEEE</u> (2001).
	C11	Rietman, "Neural Networks in Plasma Processing," <u>Journal of Vacuum Science and Technology: Part B, IEEE Transactions on Semiconductor Manufacturing</u> , 14:1 (2001).
	C12	Smyth et. al., "Hidden Markov Models an Neural Networks for Fault detection in Dynamic Systems," California Institute of Technology (1993).
	C13	Zhang et al, "Control of Spatial Uniformity in Microelectronics Manufacturing: An Integrated Approach," Proceedings of AEC/APC (2000).
EXAMINER		DATE CONSIDERED